

WHAT IS CLAIMED IS:

1. An electro-optical device, comprising:
  - a plurality of scanning lines;
  - a plurality of data lines;
  - a plurality of pixels located at intersections of the scanning lines and the data lines;
  - a scanning-line driving circuit that outputs a scanning signal to the scanning lines so as to select the scanning line corresponding to a pixel to which data is written; and
  - a data-line driving circuit that cooperates with the scanning-line driving circuit and that outputs data to the data line corresponding to the pixel to which data is written, each of the pixels including:
    - an electro-optical element that emits light with a brightness corresponding to a driving current;
    - a storage device that stores the data supplied via the data line;
    - a drive element that sets the driving current, which is supplied to the electro-optical element, according to the data stored in the storage device; and
    - a control element that repeatedly interrupts a current path for the driving current for a period after the scanning line corresponding to the pixel to which data is written is selected until a next time this scanning line is selected.
2. An electro-optical device, comprising:
  - a plurality of scanning lines;
  - a plurality of data lines;
  - a plurality of pixels located at intersections of the scanning lines and the data lines;
  - a scanning-line driving circuit that outputs the scanning signal to the scanning lines to select the scanning line corresponding to a pixel to which data is written; and
  - a data-line driving circuit that cooperates with the scanning-line driving circuit and that outputs data to the data line corresponding to the pixel to which data is written, each of the pixels including:
    - an electro-optical element that emits light with a brightness corresponding to a driving current;
    - a capacitor that stores an electric charge corresponding to the data supplied via the data line to write the data;

a drive transistor that sets the driving current according to the electric charge stored in the capacitor and supplying the driving current to the electro-optical element; and

a control transistor that repeatedly interrupts a current path for the driving current for a period after the scanning line corresponding to the pixel to which data is written is selected until a next time this scanning line is selected.

3. The electro-optical device according to claim 2, the data-line driving circuit outputting data serving as a data current to the data line,

each of the pixels further including a programming transistor, and

the programming transistor performing data writing to the capacitor based on a gate voltage generated by causing the data current to flow in a channel of the programming transistor.

4. The electro-optical device according to claim 2, the data-line driving circuit outputting data serving as a data voltage to the data line, and

data writing to the capacitor being performed according to the data voltage.

5. The electro-optical device according to claim 2, the control transistor being turned on or off under control of a pulse signal output from the scanning-line driving circuit, and

the scanning-line driving circuit converting the pulse signal supplied to the pixel to which data is written to a signal with pulse form which alternates between a high level and a low level in synchronization with the scanning signal supplied to the pixel to which data is written.

6. An electro-optical device, comprising:

a plurality of scanning lines;

a plurality of data lines;

a plurality of pixels located at intersections of the scanning lines and the data lines;

a scanning-line driving circuit that outputs a first scanning signal to the scanning lines so as to select the scanning line corresponding to a pixel to which data is written and that outputs a second scanning signal synchronous with the first scanning signal and a pulse signal synchronous with the first scanning signal; and

a data-line driving circuit that cooperates with the scanning-line driving circuit for outputting a data current to the data line corresponding to the pixel to which data is written,

each of the pixels including:

a first switching transistor having one of a source terminal and a drain terminal coupled with the data line so as to be controlled by the first scanning signal;

a second switching transistor having one of a source terminal and a drain terminal coupled with the other terminal of the first switching transistor so as to be controlled by the second scanning signal;

a capacitor coupled with the other terminal of the second switching transistor;

a programming transistor having a drain commonly coupled with the other terminal of the first switching transistor and the one terminal of the second switching transistor, and a gate commonly coupled with the other terminal of the second switching transistor and the capacitor, so that an electric charge corresponding to the data current is stored in the capacitor connected with the gate of this programming transistor;

a drive transistor paired with the programming transistor to form a current mirror circuit that sets a driving current according to the electric charge stored in the capacitor, which is connected with a gate thereof;

an electro-optical element that emits light with a brightness corresponding to the driving current; and

a control transistor provided in a current path for the driving current that interrupts the current path for the driving current under conduction control of the pulse signal.

7. The electro-optical device according to claim 6, the control transistor repeatedly interrupting the current path for the driving current for a period after the scanning line corresponding to the pixel to which data is written is selected until the next time this scanning line is selected.

8. The electro-optical device according to claim 7, the control transistor continuing to interrupt the current path for the driving current for a programming period in the period after the scanning line corresponding to the pixel to which data is written is selected until the next time this scanning line is selected, and repeatedly interrupting the current path for the driving current for a driving period subsequent to the programming period.

9. An electro-optical device according to claim 6, the control transistor interrupting the current path for the driving current for a programming period in the period after the scanning line corresponding to the pixel to which data is written is selected until the next time this scanning line is selected, and not interrupting the current path for the driving current for a driving period subsequent to the programming period.

10. An electro-optical device, comprising:

a plurality of scanning lines;

a plurality of data lines;

a plurality of pixels located at intersections of the scanning lines and the data lines;

a scanning-line driving circuit that outputs a scanning signal to the scanning lines so as to select the scanning line corresponding to a pixel to which data is written and that outputs a pulse signal synchronous with the scanning signal; and

a data-line driving circuit that cooperates with the scanning-line driving circuit and that outputs a data current to the data line corresponding to the pixel to which data is written,

each of the pixels including:

a first switching transistor having one of a source terminal and a drain terminal coupled with the data line so as to be coupled by the scanning signal;

a second switching transistor which is coupled by the scanning signal;

a capacitor coupled between the other terminal of the first switching transistor and one terminal of the second switching transistor;

a drive transistor having a source coupled with the other terminal of the first switching transistor, a gate coupled with the one terminal of the second switching transistor, and a drain coupled with the other terminal of the second switching transistor for storing an electric charge corresponding to the data current in the capacitor, which is coupled between the gate and source of the drive transistor, and for setting a driving current according to the electric charge stored in the capacitor;

an electro-optical element that emits light with a brightness corresponding to the driving current; and

a control transistor repeatedly interrupts a current path for the driving current under conduction control of the pulse signal for a period after the scanning line corresponding to the pixel to which data is written is selected until the next time this scanning line is selected.

11. The electro-optical device according to claim 10, the control transistor continuing to interrupt the current path for the driving current for a programming period in the period after the scanning line corresponding to the pixel to which data is written is selected until the next time this scanning line is selected, and repeatedly interrupting the current path for the driving current for a driving period subsequent to the programming period.

12. An electro-optical device, comprising:

a plurality of scanning lines;

a plurality of data lines;

a plurality of pixels located at intersections of the scanning lines and the data lines;

a scanning-line driving circuit and that outputs a scanning signal to the scanning lines so as to select the scanning line corresponding to a pixel to which data is written and for outputting a pulse signal synchronous with the scanning signal; and

a data-line driving circuit that cooperates with the scanning-line driving circuit and that output a data current to the data line corresponding to the pixel to which data is written,

each of the pixels including:

a first switching transistor having one of a source terminal and a drain terminal coupled with the data line so as to be controlled by the scanning signal;

a second switching transistor having one of a source terminal and a drain terminal coupled with the other terminal of the first switching transistor so as to be controlled by the scanning signal;

a capacitor coupled with the other terminal of the second switching transistor;

a drive transistor having a gate commonly coupled with the other terminal of the second switching transistor and the capacitor, and a drain commonly coupled with the other terminal of the first switching transistor and the one terminal of the second switching transistor for storing an electric charge corresponding to the data current in the capacitor, which is coupled with the gate of the drive transistor, and for setting a driving current according to the electric charge stored in the capacitor;

an electro-optical element that emits light with a brightness corresponding to the driving current; and

a control transistor that repeatedly interrupts a current path for the driving current under conduction control of the pulse signal for a period after the scanning line corresponding to the pixel to which data is written is selected until the next time this scanning line is selected.

13. The electro-optical device according to claim 12, the control transistor continues to interrupt the current path for the driving current for a programming period in the period after the scanning line corresponding to the pixel to which data is written is selected

until the next time this scanning line is selected, and repeatedly interrupts the current path for the driving current for a driving period subsequent to the programming period.

14. An electro-optical device, comprising:
  - a plurality of scanning lines;
  - a plurality of data lines;
  - a plurality of pixels located at intersections of the scanning lines and the data lines;
  - a scanning-line driving circuit that outputs a scanning signal to the scanning lines so as to select the scanning line corresponding to a pixel to which data is written and that outputs a pulse signal synchronous with the scanning signal; and
  - a data-line driving circuit that cooperates with the scanning-line driving circuit that outputs a data voltage to the data line corresponding to the pixel to which data is written, each of the pixels including:
    - a switching transistor having one of a source terminal and a drain terminal coupled with the data line so as to be controlled by the scanning signal;
    - a capacitor coupled with the other terminal of the switching transistor for storing an electric charge corresponding to the data voltage;
    - a drive transistor having a gate commonly coupled with the other terminal of the switching transistor and the capacitor for setting a driving current according to the electric charge stored in the capacitor;
    - an electro-optical element that emits light with a brightness corresponding to the driving current; and
    - a control transistor that repeatedly interrupts a current path for the driving current under conduction control of the pulse signal for a period after the scanning line corresponding to the pixel to which data is written is selected until the next time this scanning line is selected.

15. An electro-optical device according to claim 14, the control transistor continuing to interrupt the current path for the driving current for a first half period of the period after the scanning line corresponding to the pixel to which data is written is selected until the next time this scanning line is selected, and repeatedly interrupting the current path for the driving current for a last half period subsequent to the first half period.

16. An electro-optical device, comprising:
  - a plurality of scanning lines;
  - a plurality of data lines;

a plurality of pixels located at intersections of the scanning lines and the data lines;

a scanning-line driving circuit that outputs a first scanning signal to the scanning lines so as to select the scanning line corresponding to a pixel to which data is written and that outputs a second scanning signal synchronous with the first scanning signal and a pulse signal synchronous with the first scanning signal; and

a data-line driving circuit that cooperates with the scanning-line driving circuit and that outputs a data voltage to the data line corresponding to the pixel to which data is written,

each of the pixels including:

a first switching transistor having one of a source terminal and a drain terminal coupled with the data line so as to be controlled by the first scanning signal;

a first capacitor having one electrode coupled with the other terminal of the first switching transistor;

a second capacitor having one electrode to which a power potential is applied;

a second switching transistor having one of a source terminal and a drain terminal commonly coupled with the other electrode of the first capacitor and the other electrode of the second capacitor so as to be controlled by the second scanning signal;

a drive transistor having a gate commonly coupled with the one terminal of the second switching transistor, the other terminal of the first capacitor, and the other terminal of the second capacitor, a source coupled with the one electrode of the second capacitor, and a drain coupled with the other terminal of the second switching transistor for storing an electric charge corresponding to the data voltage in the second capacitor and for setting a driving current according to the electric charge stored in the second capacitor;

an electro-optical element that emits light with a brightness corresponding to the driving current; and

a control transistor that repeatedly interrupts a current path for the driving current under conduction control of the pulse signal for a period after the scanning line corresponding to the pixel to which data is written is selected until a next time this scanning line is selected.

17. The electro-optical device according to claim 16, the control transistor repeatedly interrupting the current path for the driving current for a driving period in the period after the scanning line corresponding to the pixel to which data is written is selected

until the next time this scanning line is selected, and continuing to interrupt the current path for the driving current for the period other than the driving period.

18. An electronic apparatus including the electro-optical device according to claim 1.

19. A method of driving an electro-optical device including a plurality of pixels located at intersections of scanning lines and data lines, a scanning-line driving circuit that outputs a scanning signal to the scanning lines so as to select the scanning line corresponding to a pixel to which data is written, and a data-line driving circuit cooperating with the scanning-line driving circuit that outputs data to the data line corresponding to the pixel to which data is written, the method comprising:

a first step of outputting data to the data line corresponding to the pixel to which data is written;

a second step of storing the data supplied via the data line in a storage device owned by the pixel to which data is written to write the data;

a third step of causing a drive element owned by the pixel to which data is written to set a driving current according to the data stored in the storage device and to supply the driving current to a current-driven electro-optical element that emits light with a brightness corresponding to the driving current; and

a fourth step of repeatedly interrupting the current path for the driving current for a period after the scanning line corresponding to the pixel to which data is written is selected until the next time this scanning line is selected.

20. A method of driving an electro-optical device including a plurality of pixels located at intersections of scanning lines and data lines, a scanning-line driving circuit that outputs a scanning signal to the scanning line so as to select the scanning line corresponding to a pixel to which data is written, and a data-line driving circuit cooperating with the scanning-line driving circuit that outputs data to the data line corresponding to the pixel to which data is written, the method comprising:

a first step of outputting data to the data line corresponding to the pixel to which data is written;

a second step of storing an electric charge corresponding to the data supplied via the data line in a capacitor owned by the pixel to which data is written to write the data;

a third step of causing a drive transistor owned by the pixel to which data is written to set a driving current according to the electric charge stored in the capacitor and to



supply the driving current to an electro-optical element that emits light with a brightness corresponding to the driving current; and

a fourth step of repeatedly interrupting the current path for the driving current for a period after the scanning line corresponding to the pixel to which data is written is selected until the next time this scanning line is selected.

21. The method according to claim 20, the first step including a step of outputting data serving as a data current to the data line, and

in the second step, the data current supplied to the data line is converted into a voltage, and the data is written to the capacitor according to the converted voltage.

22. The method according to claim 20, the first step including a step of outputting data serving as a data voltage to the data line, and

in the second step, the data is written to the capacitor according to the data voltage supplied to the data line.

23. The method according to claim 20, in the fourth step, the current path for the driving current being repeatedly interrupted in synchronization with the scanning signal supplied to the pixel to which data is written.